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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/536,689	01/12/2006	Harald Michl	WAS0701PUSA	4643
22045 7590 12/21/2006 BROOKS KUSHMAN P.C. 1000 TOWN CENTER TWENTY-SECOND FLOOR SOUTHFIELD, MI 48075			EXAMINER ZUCKER, PAUL A	
			ART UNIT	PAPER NUMBER
			1621	
SHORTENED STATUTORY PERIOD OF RESPONSE		MAIL DATE	DELIVERY MODE	
3 MONTHS		12/21/2006	PAPER	

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/536,689	MICHL ET AL.	
	Examiner	Art Unit	
	Paul A. Zucker	1621	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 21-40 is/are pending in the application.
- 4a) Of the above claim(s) 31-40 is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 21-30 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 May 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>1/12/2006</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Election/Restrictions

Restriction is required under 35 U.S.C. 121 and 372.

This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1.

In accordance with 37 CFR 1.499, applicant is required, in reply to this action, to elect a single invention to which the claims must be restricted.

- I. Claims 21-30, drawn to a process for the acid-catalyzed hydrolysis of a carboxylic ester, classified in class 562, subclass 606.
- II. Claims 31-40, drawn to an apparatus for the acid-catalyzed hydrolysis of a carboxylic ester, classified, for example, in class 422, subclass 234.

The inventions listed as Groups I and II do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons: The process which Applicants claim is not novel (*vide infra*) and cannot, therefore serve as the special technical feature required for unity of invention.

Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim

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remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

1. During a telephone conversation with Bill Conger on 21 November 2006 a provisional election was made with traverse to prosecute the invention of Group I, claims 21-30. Affirmation of this election must be made by applicant in replying to this Office action. Claims 31-40 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Specification

2. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.
3. The disclosure is objected to because of the following informalities: There is no section heading : Brief Description of the Several Views of the Drawing(s): See MPEP § 608.01(f). A reference to and brief description of the drawing(s) as set forth in 37 CFR 1.74. Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

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invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35

U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
 2. Ascertaining the differences between the prior art and the claims at issue.
 3. Resolving the level of ordinary skill in the pertinent art.
 4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
4. Claims 21-30 rejected under 35 U.S.C. 103(a) as being unpatentable over Moritz et al (WO 01/27062-A2 04-2001).

Instantly claimed is a process for acid-catalyzed hydrolysis of a carboxylic ester to the corresponding carboxylic acid and alcohol hydrolysis products in the presence of water, comprising introducing carboxylic ester and water into a first pre-reactor containing a hydrolysis catalyst removing a reaction mixture from the first pre-reactor and introducing at least a portion thereof into a reactive distillation column containing a hydrolysis catalyst which further converts a water-containing carboxylic ester stream to carboxylic acid and alcohol, and simultaneously at least partly separating the water-containing carboxylic ester stream into components thereof, mixture(s) comprising compounds of low volatility and low-boiling carboxylic ester being removed at least partly as a distillate from an upper rectification zone of the reactive distillation column and/or an accompanying condensation system, and collecting less volatile compounds at least partly as a bottom fraction which is passed into a further distillation column, wherein

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aqueous carboxylic acid from the bottom fraction or from the lower rectification zone of the distillation column is mixed with further carboxylic ester and directed to a second pre-reactor containing a hydrolysis catalyst, and a reaction mixture is removed from the second pre-reactor and passed at least partly into the reactive distillation column.

Moritz teaches (Page 22, line 1- page 22, line 2, claim 1) a process for hydrolytically obtaining a carboxylic acid and alcohol from the corresponding carboxylate and water, in which process a flow containing carboxylate is brought into contact with a hydrolysis catalyst in the presence of water at elevated temperature in a reactive distillation column (15), and the resulting reaction mixture is simultaneously separated at least partially into the components in the reactive distillation column, the more volatile compounds, e.g. alcohol, being drawn off from the head of the reactive distillation column (15) as a so-called head flow and the less volatile compounds, e.g. carboxylic acid, collecting at least partially in the base of the column (15) as a bottom fraction, which can be drawn off as a so-called bottom or base flow, further characterised in that the flow containing the carboxylate is firstly fed to a pre-reactor (13), in which the carboxylate is brought into contact with a first catalyst in the presence of water, by means of which the carboxylate is partially cleaved into the hydrolysis products; the reaction mixture is drawn off from the pre-reactor (13) and at least partially fed into the reactive distillation column (15), and is brought into contact with a second hydrolysis catalyst for at least partial conversion

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of the remaining carboxylate into a carboxylic acid and alcohol. Moritz teaches (Paragraph [0016]) continuous operation of his process. Moritz teaches (Paragraph [0002]) the azeotropic mixtures of alcohol and ester. Moritz exemplifies (Paragraphs [0034]-[0046]) use of his process for the hydrolysis of methyl acetate.

The difference between the process of Moritz as described above and that instantly claimed is that, in the instant case, heavy material from the distillation column containing carboxylic ester are mixed with further carboxylic ester and sent to second pre-reactor whose output is passed to the reactive distillation column while. Moritz, above, does not appear to contemplate such a sequence of steps.

Moritz, however, teaches (Paragraph [0019], see also Fig. 5) the use of two pre-reactors. Moritz teaches (Paragraph [0012]) return of the carboxylate flow (presumably hot) from the separation (distillation) stage mixed with water to the pre-reactor. Although Moritz does not specify the conditions under which the second pre-reactor is used or that the recycled flow of carboxylate be directed to the second pre-reactor one of ordinary skill in the art would be motivated to do so based upon Moritz' teaching (Page 5, lines 2-6) that catalyst poisons (metal ions) are trapped in the pre-reactor. Thus in order to avoid leaching of trapped metal ions from the first pre-reactor one of ordinary skill in the art would have directed the recycle flow to the second pre-reactor. Since Moritz suggests the use of a second pre-reactor there would have been a reasonable expectation for success for its use.

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Thus the instantly claimed process would have been obvious to one of ordinary skill in the art.

Conclusion


5. Claims 21-40 are pending. Claims 21-30 are rejected. Claims 31-40 are withdrawn from further consideration.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Paul A. Zucker whose telephone number is 571-272-0650. The examiner can normally be reached on Monday-Friday 5:30-3:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thurman K. Page can be reached on 571-272-0602. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.


PAULA A. ZUCKER, PH.D.
PRIMARY EXAMINER
